

**REMARKS**

1. Applicants thank the Examiner for the personal interview accorded January 8, 2003.
2. Applicants acknowledge the Office's removal of the rejection of EP '833 alone, and note EP '833 is newly applied together with other references. This rejection is traversed below.
3. In response to the interview Jan 8 2003, and rejection under 35 USC 103(a), Applicant conducted coating experiments comparing the instant process on a non-fibrous substrate with that of the prior art pre-mixture of metathesizable monomer and catalyst on the same non-fibrous substrate. A declaration per 37 CFR 1.132 is attached with this reply.
3. Support for the amendment to claims 99 and 104 is on page 6, line 14.
4. Support for newly added claims 151-161, and likewise claims 162-172 is from page 22, beginning at line 22 to page 23, line 22.
5. Claims 54, 56, 57, 59-83, 93, 94, 96, 98-102, 104-142, and 144- 150 were rejected under 35 USC 103(a) as unpatentable over WO97/38036 and/or US 5,491,206 (Brown-Wensley et al) in view of Lesser (US 2,978,354), Cole (US 3,485,655), Krieble (US 2,901,099) and EP 424,233. The rejection is traversed as follows.
6. Primary references WO97/ 38036 and Brown-Wensley both teach mixtures of catalyst and methathesizable monomers prior to molding or film formation on substrate. There is no teaching or suggestion to do what applicants have done, as characterized by the claims. The claimed invention is directed to a coating method whereby metathesis catalyst is applied to a

substrate and material that undergoes a metathesis reaction is applied to the substrate and a polymerization product obtained.

Secondary references Lesser, Cole, and Krieble are not directed to metathesizable catalysts nor any materials that undergo a metathesis reaction. Absent from these references is any basis for a reasonable expectation of success in doing what applicants have done according to claims 99, 104 and dependent claims.

EP 0 424 833 B1) discloses a reaction injection molding process that requires application of heat with the injection of ROMP monomers into a mold chamber that contains fibers coated with a classical olefin metathesis catalyst (requiring a co-catalyst). The individual fibers become embedded in a molded matrix of the ROMP composition. The fibers are immersed and completely surrounded by the polymer. This is distinguished from a coating on a surface of a non-fibrous substrate. The method of coating is directed to forming a coating on the surface of the non-fibrous substrate, and can not read on a process to surround fibers in a mold. Furthermore, the coating does not become a matrix in which the substrate is embedded.

The Office noted on page 3 of the Last Action that there is a reasonable expectation that a metathesis reaction would be expected to occur when a metathesizable material is contacted on the fiber substrate that has pre-applied metathesis catalyst. Applicants point out there is nothing in the secondary references alone or taken together with the primary references to provide a reasonable expectation of the demonstrated unexpected improved coating adhesion.

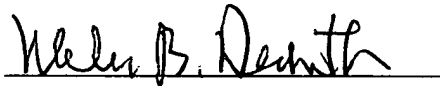
Applicant's declaration per 37 CFR 1.132 is presented to show unexpected adhesion improvement of a polymerized coating when the material that undergoes a metathesis reaction is applied to a non-fibrous substrate which has been coated with a metathesis catalyst. Further evidence of improvements in

adhesion to various substrates is provided in the specification. Example 26 shows many different substrates were coated according to the invention and high adhesion ratings were obtained. Examples 27-31 show high adhesion to such substrates as stainless steel, aluminum, polypropylene, thermoplastic elastomers, ABS, PMMA, paper and TEFLON.

Whereas Claim 99 and 104 are distinguished on the basis that the substrate is non-fibrous, and added claims added characterize non-fibrous substrates, in view of side-by-side comparisons of poor adhesion from pre-mixed monomer and catalyst, and unexpected superior adhesion results, together with evidence in the specification commensurate with the claims, Applicants submit that their invention has been patentably distinguished.

Removal of the rejection under 35 USC 103(a) is respectfully requested.

Respectfully submitted,



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**CERTIFICATE OF MAILING (37 CFR 1.8(a))**

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited on the date indicated below with the United States Postal Service in an envelope addressed to the Assistant Commissioner of Patents, Washington, DC 20231, with sufficient postage as first class mail (37 CFR 1.8(a)).



Signature

Alida Clark

Date: February 24, 2003

## **Supplemental Interview Summary**

Supplemental to the interview summary provided by the Examiner, Applicants provide comments as to the substance of the interview Jan. 8, 2003.

### **1. Brief Description of the nature of any exhibit shown.**

Coating samples of ENB polymerized from the surface of polymethylmethacrylate and ABS substrates which pretreated with ruthenium catalyst applied at the surface of the substrates, and subsequently coated with ENB wherein a polymer film formed were shown. These samples demonstrated firm adhesion of the polymer coating, as a demonstration of features of the invention

### **2. Claims discussed**

Claim 99 feature "a material that undergoes a metathesis reaction" was explained from support in the specification on page 7, line16, to include a monomer, or an oligomer or a mixture thereof, and not a polymer. An oligomer was explained in terms of a molecular weight in a range that maintained the oligomer as a homogeneous liquid.

Applicant explained that to-date the art has not contemplated use of metathesis catalysts outside of bulk polymerization methods under controlled atmosphere, and that metathesis catalysts which are stable to air and water had only recently been invented.

The catalyst system of the Ciba reference was explained in terms of a mixture of a latent heat-reactive catalyst.

Claims 81 and 82 as 100% solids, absent solvent, were discussed in view of WO 97/38036 (CIBA) and US 5,491,206 (Brown-Wensley) . It was explained

that although solvent was used, neither reference discloses or teaches the prior coating of metathesis catalyst and subsequent application of monomer. In particular, it was pointed out that Brown-Wensley discloses coatings made specifically by premixing catalyst in solvent with monomer and applying to substrate to provide an unsupported film, removed from the pan.

Claim 81 was distinguished in terms of a 100% reactive mixture being improved from the standpoint of practical industrial processes, and that the feature of Claim 82 specifying the absence of a solvent should be deemed allowable as written.

Applicants' representative obtained acknowledgment that the three elements of prima facie obviousness were not all presently shown, and that an obvious-to-try basis for rejection was not prima facie obviousness. Noted as absent from the teachings, specifically was no teaching or suggestion of all of the claim limitations. It was noted by the attendants that any evidence of unexpected results to be presented, did not indicate acquiescing of prima facie obviousness, but would be supportive of nonobviousness.

It was noted that Ciba provided no basis make comparisons as this was a bulk polymerization of matrix around fibers, known as Reactive Injection Molding, and that the claims do not read on a RIM process.

Example 18 of Brown-Wensley was discussed in terms of what type of evidence would be supportive of patentability. Example 18 of Brown-Wensley was a formation of a self-supporting sheet by mixing catalyst with dicyclopentadiene and casting onto a pan. The film made did not adhere to the pan. Example 18 was discussed as a starting point for any comparative example of the invention, and that improved adhesion to the substrate should be regarded as representative of unexpected results.

clean  
Amended Claims marked-up version

E1

99. A method for providing a coating on a non-fibrous substrate surface comprising: (a) providing a metathesis catalyst at the substrate surface; and subsequently (b) contacting said catalyst on the substrate surface with a coating by printing, spraying, dipping, brushing, wiping, or roll coating of a material that undergoes a metathesis reaction, and (c) forming a coating on said substrate surface from the product of said metathesis reaction.

E2

104. A method for providing a coating on the outermost portion of a non-fibrous substrate, said coating is uniform, conforming to the outermost surface of said substrate, said method comprising:  
(a) providing a metathesis catalyst at the substrate surface; and subsequently (b) contacting the catalyst on the substrate surface with a material that undergoes a metathesis reaction to form a coating of the product of said metathesis reaction on said substrate.

E3

New 151. The method according to claim 99 wherein said non-fibrous substrate comprises an elastomeric material.

New 152. The method according to claim 151 wherein the elastomeric material is a thermoplastic elastomer.

New 153. The method according to claim 99 wherein the non-fibrous substrate comprises a metallic material.

New 154. The method according to claim 153 wherein metallic material comprises a material selected the group consisting of iron, stainless steel, electrogalvanized steel, lead, aluminum, copper, brass, bronze, MONEL metal alloy, nickel, zinc, tin, gold, silver, platinum, and palladium.

New 155. The method according to claim 154 wherein the metallic material comprises steel.

New 156. The method according to claim 151 wherein the elastomeric material comprises a material selected from the group consisting of natural rubber, polychloroprene, polybutadiene, polyisoprene, styrene-butadiene copolymer rubber, acrylonitrile-butadiene copolymer rubber, ethylene-propylene copolymer rubber, ethylene-propylene-diene terpolymer rubber, butyl rubber, brominated butyl rubber, alkylated chlorosulfonated polyethylene rubber, hydrogenated nitrile rubber, silicone rubber, fluorosilicone rubber, poly(n-butyl acrylate), and mixtures thereof.

E3

New 157. The method according to claim 99 wherein said non-fibrous substrate is selected from the group consisting of fiber-reinforced composite, a sheet molding compound, a fiber-reinforced elastomer composite and a fiber-reinforced prepreg.


New 158. The method according to claim 153 wherein the metallic material is previously treated prior to coating by a method selected from the group consisting of degreasing, grit-blasting, converting, phosphatizing, electrodepositing, and autodepositing.

New 159. The method according to claim 99 wherein said non-fibrous substrate is a machined part made from metal and elastomer.

New 160. The method according to claim 99 wherein said non-fibrous substrate is an article made from a material selected from the group consisting of thermoplastic, thermoset, sheet metal, coil metal, fiberglass, wood, paper, ceramics, and glass.

New 161. The method of claim 160 wherein said non-fibrous substrate comprises a material selected from the group consisting of low-density polyethylene, linear low-density polyethylene, medium density polyethylene, high-density polyethylene, polypropylene, and propylene-ethylene random copolymer, and propylene-ethylene block copolymers.

New 162. The method according to claim 104 wherein said non-fibrous substrate comprises an elastomeric material.

 New 163. The method according to claim 162 wherein the elastomeric material is a thermoplastic elastomer.

New 164. The method according to claim 104 wherein the non-fibrous substrate comprises a metallic material.

New 165. The method according to claim 164 wherein metallic material comprises a material selected the group consisting of iron, stainless steel, electrogalvanized steel, lead, aluminum, copper, brass, bronze, MONEL metal alloy, nickel, zinc, tin, gold, silver, platinum, and palladium.

New 166. The method according to claim 165 wherein the metallic material comprises steel.

New 167. The method according to claim 162 wherein the elastomeric material comprises a material selected from the group consisting of natural rubber, polychloroprene, polybutadiene, polyisoprene, styrene-butadiene copolymer rubber, acrylonitrile-butadiene copolymer rubber, ethylene-propylene copolymer rubber, ethylene-propylene-diene terpolymer rubber, butyl rubber, brominated butyl rubber, alkylated chlorosulfonated polyethylene rubber, hydrogenated nitrile rubber, silicone rubber, fluorosilicone rubber, poly(n-butyl acrylate), and mixtures thereof.

New 168. The method according to claim 104 wherein said non-fibrous substrate is selected from the group consisting of fiber-reinforced composite, a sheet molding compound, a fiber-reinforced elastomer composite and a fiber-reinforced prepreg.

New 169. The method according to claim 164 wherein the metallic material is previously treated prior to coating by a method selected from the group consisting of degreasing, grit-blasting, converting, phosphatizing, electrodepositing, and autodepositing.



New 170. The method according to claim 104 wherein said non-fibrous substrate is a machined part made from metal and elastomer.

New 171. The method according to claim 104 wherein said non-fibrous substrate is an article made from a material selected from the group consisting of thermoplastic, thermoset, sheet metal, coil metal, fiberglass, wood, paper, ceramics, and glass.

New 172. The method of claim 160 wherein said non-fibrous substrate is an article comprising a thermoplastic material selected from the group consisting of low-density polyethylene, linear low-density polyethylene, medium density polyethylene, high-density polyethylene, polypropylene, and propylene-ethylene random copolymer, and propylene-ethylene block copolymers.

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